

Microsoft Machine Learning Engineer

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Movie Recommendation System

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The AI Movie Recommendation System aims to provide personalized movie recommendations by analyzing user preferences, viewing history, and ratings. Using various machine learning models such as K-Nearest Neighbors (KNN), KDTree, and Naive Bayes, the project ensures a high accuracy rate in predicting movies users are likely to enjoy. These models are implemented to enhance the system's performance in delivering relevant recommendations and adapting to different user patterns.

The system is built on the MovieLens (ml-latest-small) dataset, which consists of 100,836 ratings and 3,683 tag applications for 9,742 movies. This data was generated by 610 users between March 29, 1996, and September 24, 2018. The dataset provides rich information for training the recommendation engine, allowing the system to predict users' preferences more accurately.

Through the use of advanced algorithms, the recommendation system continuously improves by learning from user feedback. By applying both collaborative filtering and content-based filtering techniques, the project delivers tailored movie suggestions to enhance the user experience and boost engagement on streaming platforms.

Objectives:

- To develop a robust recommendation engine that can accurately suggest movies tailored to individual user preferences.
- To implement various machine learning techniques, such as collaborative filtering and content-based filtering, to enhance the accuracy of recommendations.
- To create a user-friendly interface that allows users to easily navigate and receive movie suggestions.

Key Features:

- **User Profiling:** Collect and analyze user data, including viewing history, ratings, and genres, to build a personalized profile.
- **Recommendation Algorithms:** Implement collaborative filtering (user-based and item-based) and content-based filtering to generate recommendations.
- **Feedback Mechanism:** Allow users to provide feedback on recommendations, improving the system's accuracy over time.
- **Search and Filter Options:** Enable users to search for movies by genre, year, or rating and filter results based on personal preferences.
- **User Interface:** Design an intuitive interface for seamless interaction with the system.

Expected Outcomes:

- A functional movie recommendation system that enhances user satisfaction by providing relevant movie suggestions.
- Insights into user preferences and viewing trends can inform content acquisition and marketing strategies for streaming services.